The SQL Productivity Environment

SQL Solutions

PRODUCTIVITY. For years computer professionals have been searching for productivity solutions to meet the ever-increasing user demands for faster access to corporate information.

In the 1990s, given the complexity of integrating disparate information architectures across the enterprisewide corporate computing environment—marked by complex networks, dissimilar communication protocols, heterogeneous hardware platforms and operating environments and distributed, interoperable relational databases—the search for productivity solutions has taken on new meaning.

Relational database management systems (RDBMSs) have evolved as the preeminent database architecture of the 1990s, with SQL serving as the common language and vehicle for querying and manipulating data. Early on the significant penetration of RDBMSs ushered in a new era of productivity evidenced by a proliferation of productivity tools, such as 4GLs, code generators, screen painters and spreadsheets. These early tools offered many-fold productivity gains over traditional 3GL programming environments.

But given the complexity of the 1990s enterprisewide computing arena and the industry shift toward distributed, multi-RDBMS environments, these first generation SQL tools are not enough. The success of today's SQL professionals—systems designers, SQL programmers, database administrators (DBAs) and system administrators (SAs)—rests on the availability of high-performance, RDBMS-independent SQL productivity tools that are necessary to design, develop and manage robust RDBMS applications, particularly in corporations where more than one RDBMS is becoming commonplace.

Without question, proprietary RDBMS vendors have made great strides in developing powerful RDBMS "engines." But such vendors have lagged far behind in developing high performance SQL tools. SQL professionals are now struggling to contain the rising SQL application backlog.

Today SQL professionals are confronted with a host of new problems that traditional SQL tools have failed to solve. SQL professionals are now frustrated by the difficulties of integrating and porting relational database applications, the need for a common relational repository to support systems designs for multiple RDBMSs, the inefficiencies of SQL as a language, the differences between RDBMS vendor implementations of SQL, the scarcity of programmer productivity tools for developing, debugging and performance tuning SQL code and the challenge of managing security, users, applications, servers, devices, source code, database and system objects and storage capacity resources in dynamic production RDBMS environments.

At SQL Solutions we are intimately familiar with these problems. We are SQL Systems Integrators. For years we have been providing our clients with solutions to such problems, aided by a powerful suite of SQL productivity tools, which we now offer as the SQL Productivity Environment (SPE).

The SQL Productivity Environment (SPE)

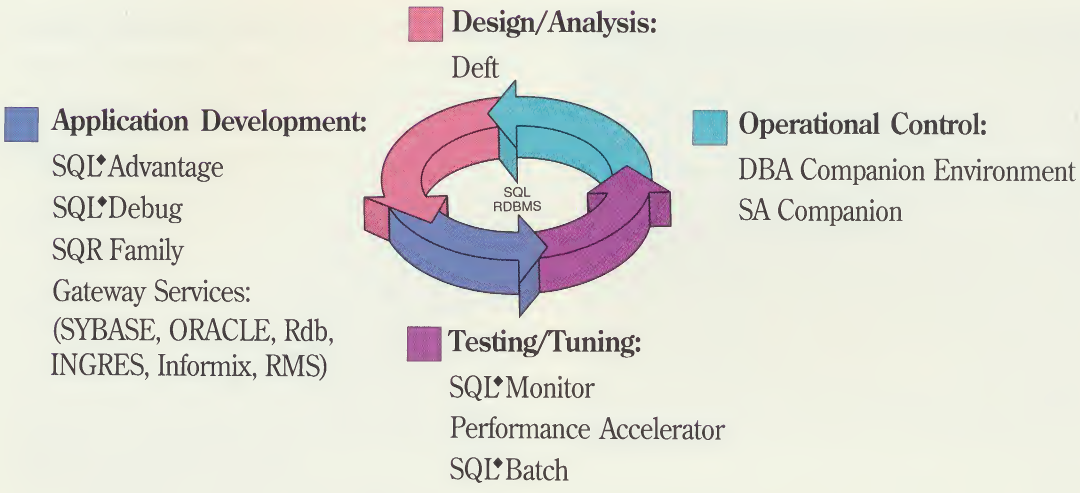
The SQL Productivity Environment (SPE) is a compendium of tools that solve the problems SQL professionals face at each phase of the SQL Application Lifecycle, from systems design and analysis to application development and debugging, testing and tuning, on through operational control.

In a real sense, our customers designed our solutions. Several of these tools were developed in response to client disappointment with existing proprietary offerings. Others arose directly out of our consulting experience, where we determined better ways to increase productivity, flexibility and precision. Utilizing the SQL Productivity Environment, our consultants have implemented hundreds of applications for every major RDBMS environment, including SYBASE™, ORACLE™, Rdb™, INGRES™, Informix™ and DB2™, across every major industry.

SPE: The Tools of Relationally Integrated Systems Engineering (RISE)

The SQL Productivity Environment is the only toolset on the market that supports Relationally Integrated Systems Engineering (RISE), a new discipline that combines design and analysis methods, productivity tools and structured techniques to facilitate the planning, designing, development and maintenance of RDBMS-based applications. With the tools of RISE, SQL professionals are now equipped to slash the growing RDBMS application backlog and reduce systems development and maintenance costs dramatically.

SQL Productivity Environment: The SQL Application Lifecycle Solution



🟥 **Design/Analysis:**

Deft

🟦 **Application Development:**

SQL*Advantage
SQL*Debug
SQR Family
Gateway Services:
(SYBASE, ORACLE, Rdb,
INGRES, Informix, RMS)

🟦 **Operational Control:**

DBA Companion Environment
SA Companion

🟪 **Testing/Tuning:**

SQL*Monitor
Performance Accelerator
SQL*Batch

SQL Productivity Environment Tools

Deft™, a multiuser Computer-Aided Software Engineering (CASE) tool for Macintosh, Unix and VMS environments. Deft provides true RDBMS integration and both forward and reverse engineering of form definitions and schemas between all major RDBMSs.

SQL*Advantage™, the first programmer productivity environment allowing SQL programmers to develop and detect errors in SQL code without leaving their native editor.

SQL*Debug™, the first interactive, source-level debugger for procedural extensions to SQL.

The SQR Family

SQR™, a powerful procedural 4GL and industrial-strength report writer designed for all major RDBMSs.

Easy SQR™, an ad hoc query builder and report writer featuring a window-driven interface.

SQR*Developer's Kit™, a toolkit that provides comprehensive debugging and cross-referencing facilities for SQR programmers.

Gateway Services, a suite of gateways that provide both read and write access between major RDBMSs and nonrelational file structures, including SYBASE, ORACLE, Rdb, INGRES, Informix and VMS RMS files.

SQL*Monitor™, a suite of monitoring services to pinpoint performance bottlenecks in all areas of client/server environments, from client transactions to overall system-wide performance.

Performance Accelerator™, a software optimizer that dramatically improves the performance of ORACLE SQL*Forms™.

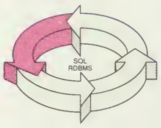
SQL*Batch™, a unique tool that adds multi-tasking capabilities to your RDBMS under VMS.

DBA Companion Environment™, a robust toolset for managing applications, users, source code, security, database objects and storage capacity resources in SQL production environments.

SA Companion™, a window-based operational control toolset that automates the functions of SQL systems administration in multiserver environments.

Tools for Each Phase of the SQL Application Lifecycle

Design and Analysis Phase



Sound relational systems design requires both expertise in design methodology and the use of CASE technology engineered specifically for RDBMS development. SQL Solutions satisfies both requirements by offering the RISE Methodology, a proven body of design and analysis methods and structured techniques, and the premier CASE solution for RDBMSs—Deft.

Deft

Deft is the industry leading multiuser RDBMS CASE product for Macintosh, VMS and Unix environments. No other RDBMS CASE tool is as powerful or as easy to use as Deft. And Deft is the first CASE solution to support all the critical functionality of Relationally Integrated Systems Engineering (RISE).

Ease of Use. Deft's intuitive Macintosh interface lets you start designing robust relational systems even before you have finished reading the manual. As for flexibility, Deft supports the methodology standards of Chen/ Bachman, Martin, IRM, Yourdon and Gane & Sarson.

Complete RDBMS Integration. Deft provides true integration with every strategic RDBMS, including SYBASE, ORACLE, INGRES, Rdb, Informix and DB2, resulting in complete relational systems portability and dramatically reduced maintenance costs. With its unparalleled forward and reverse engineering feature, Deft automatically generates an RDBMS-specific schema and form definition from Deft design documents, allowing you to reverse engineer forms and data definitions back to Deft design documents. You can then forward engineer the design documents into another RDBMS-specific schema. In this fashion, you can forward and reverse engineer systems between ORACLE and SYBASE, for example, with a click of the mouse.

Deft also supplies a powerful dictionary-driven set of four editors (Entity-Relationship Diagram, Data Flow Diagram, Program Structure Diagram and Forms Editor) that share a common relational repository.

Presentation-Quality Reporting and Documentation. Ease of use and true RDBMS integration are only the beginning. Deft excels in its presentation-quality and system documentation capabilities. Deft automatically formats high-resolution drawings and sophisticated reports through desktop publishing on the Macintosh.

Whether you are designing and building new relational systems or maintaining existing systems, Deft gives you the power to go from requirements specifications through systems generation and back again—all with the ease of use and presentation quality only a Macintosh can offer.

Application Development Phase

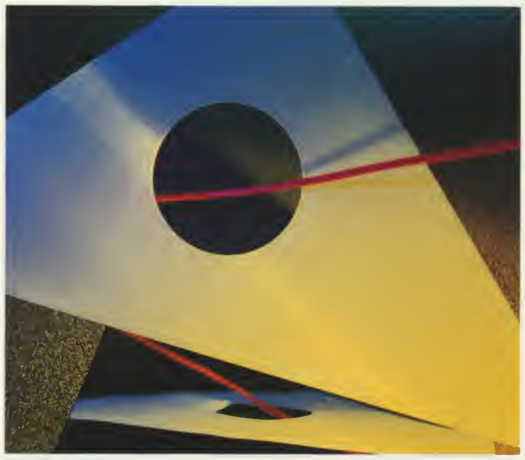
The evolution of RDBMSs opened up a floodgate for nonprocedural application development tools to offset the high costs of 3GL programming. The benefits of these SQL-based, nonprocedural tools were clearly seen in the acceleration of application prototyping. Serious SQL programmers soon realized, however, that nonproceduralilty forced costly trade-offs. Sacrifices had to be made in programmatic control to take advantage of nonprocedural SQL.

Today the pendulum has shifted the other way. SQL programmers demand a balance between nonprocedurality and procedural precision in their RDBMS application development tools. SQL Solutions is the first solutions vendor to acknowledge this market trend. We offer a suite of application development tools that enable SQL programmers to prototype, develop, enhance and maintain sophisticated RDBMS applications quickly and cost effectively, without sacrificing procedural control.

SQL◆Advantage: The SQL Command Center

SQL◆Advantage is the first multi-RDBMS programmer productivity environment for developing and debugging procedural SQL code. With SQL◆Advantage developers can now write SQL code faster than ever before, realizing three- to fivefold productivity gains. SQL◆Advantage features three components:

SQL◆Edit is a familiar programmer editing environment tailored to meet the challenges inherent to SQL development. SQL◆Edit emulates the popular editors for VMS, Unix and PC environments such as EMACS, EVE/TPU, VI and Brief or allows you to use our own intuitive editor. SQL◆Edit lets you submit SQL code directly to the database without leaving the editor. You can even highlight a part of a query and submit just that piece of code for execution. This enables you to iteratively test and fine-tune complex queries rapidly.



SQL◆Code Checker offers comprehensive syntax and error checking of your procedural SQL code. If your prodecure has failed, the SQL◆Code Checker shows you the exact location of each error, allowing you to correct errors immediately. The SQL◆Code Checker provides object reference and definition checking to ensure that your code correctly refers to database objects, and it also detects unusual or unrecommended coding practices, such as defining a label or variable without referring to it later in your procedure.

SQL◆Help provides fingertip access to a wealth of context-sensitive help information. SQL◆Help gives you information about the database schema, contents of stored procedures or triggers, library functions, SQL syntax, RDBMS vendor documentation and editor features—all without leaving the editing environment. You can even cut such help information and paste it directly into your procedure.

SQL◆Debug

SQL◆Debug is the first multi-RDBMS, interactive source-level debugger for SQL environments. SQL◆Debug applies 3GL debugging technology to assist SQL developers in identifying and correcting logic and performance problems in their SQL code early in the development process.

Featuring a graphical user interface, SQL◆Debug offers step-level execution, breakpoint setting, conditional tracing, stack content viewing and variable examination and control to identify logic and naming bugs that frequently creep into SQL code.

To identify performance bottlenecks, SQL◆Debug captures execution timing statistics for SQL statements. SQL◆Debug tracks the frequency with which a SQL statement is invoked to ensure that all logic threads in your code have been thoroughly exercised. Finally, SQL◆Debug provides optimization plan analysis and offers complete transaction auditing for SQL transactions issued from *any* application running under the network.

The SQR Family

The SQR Family represents a complete report writing solution and much more. It is composed of three individual products—SQR, Easy SQR, and SQR◆Developer's Kit.

SQR is the only procedural 4GL report writer available for the multi-RDBMS market today. For serious SQL programmers, SQR combines the latent power of nonprocedural SQL with the grace of a programming language.

SQR supports the full complement of SQL, including DML, DDL and DCL commands. What differentiates SQR, however, is its unique structure, which allows you to embed procedural commands (such as IF THEN ELSE, DO WHILE, EVALUATE), print statements and report format commands directly in a SQL query. SQR is an intuitive, feature-rich language, supporting fixed and relative field positioning, substitution variables, parameter passing, 3-D arrays and precompiled queries. SQR can even serve as a callable function library. With SQR a user can perform almost any 3GL task—but twice as fast, with half the number of lines of code.

SQR gives you power to write *any* report —we guarantee it.

Easy SQR is an easy yet powerful query builder and 4GL report writer that enables casual and nontechnical users to create the complete range of formatted reports without having to write a single line of SQR or SQL code. Easy SQR features a window-driven interface to combine simplicity with power.

Easy SQR provides several default report formats, including tabular reports, form letters, mailing labels, master-detail and data export formats. A full-screen editor allows the user to refine the layout of a report directly on the screen.

While primarily for the nontechnical user, Easy SQR is also used extensively by SQR programmers as a prototyping tool. Easy SQR generates modifiable SQR code. SQR programmers typically build a skeleton report in Easy SQR, generate the SQR code, then augment the report within their native editor using SQR commands.

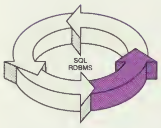
SQR◆Developer's Kit supplies SQR programmers with valuable add-on tools to facilitate the analysis and debugging of sophisticated SQR procedures. Collectively, the SQR◆Developer's Kit provides variable and procedure call tracing, performance tuning statistics on query and procedure execution, a cross-reference facility for variables to determine improper use or variable mistyping and a detailed display of the SQR program structure, formatted in terms of hierarchical dependencies.

Gateway Services

Gateways are typically used in one of two fashions: as part of a migration strategy to preserve an organization's data investment as they move from one RDBMS environment to another or as a cooperative strategy whereby an organization has committed to an RDBMS standard but decides to introduce new applications on a different RDBMS that must be integrated within the existing systems environment.

SQL Solutions has developed a sophisticated gateway strategy to bridge the gulf between RDBMSs and nonrelational data sources, enabling an organization to fully preserve their data and application investment. The Gateway Services forge links between the SYBASE, ORACLE, Rdb, INGRES, Informix RDBMSs and VMS RMS files, with other data sources planned. Utilizing a powerful Server Generation Language (SGL) technology, the gateways provide full read and write access and automatically manage the conversion of underlying data types, the mapping of SQL extensions and the handling of error messages between both client and server.

Testing and Performance Tuning Phase



Armed with high-powered application development tools, SQL programmers can now build better systems faster than ever before. But once your SQL-based systems are up and running, careful attention must be given to testing, refining and performance tuning the application to satisfy production demands. The goal for this phase of the SQL Application Lifecycle is to build *faster* systems *better* than before.

We have translated our experience with building systems for every RDBMS environment to provide you with productivity tools to assist in dramatically reducing bottlenecks in the testing and tuning cycles.

SQL*Monitor

SQL*Monitor provides a full range of monitoring services for client/server environments. SQL*Monitor probes critical areas of the client/server environment—client transactions, servers and system administration events—to assist SQL programmers and system administrators in performance tuning both applications and systemwide performance. The SQL*Monitor features three monitoring services:

The Client Monitor offers transaction performance analysis. It collects transaction data for logical and physical I/O, elapsed time and CPU time. For each transaction the Client Monitor maintains usage, table scan, abort and deadlock counts. An audit trail can be generated to monitor transaction execution for each account connected to the server. The Client Monitor also collects user accounting information for use in sophisticated chargeback/ accounting systems.

The Server Monitor collects usage statistics about server resources—specifically CPU utilization, disk I/O and memory resources—and presents the information in either graphical or tabular format to the Server Monitor. With the Server Monitor, system administrators can effectively monitor the overall performance of large-scale distributed database networks, pinpointing response time problems, improper I/O load balancing across disk devices and the impact of memory utilization on system throughput.

The SA Monitor allows a system administrator to manage remote server installations from a central site. The SA Monitor intercepts administrative event conditions occurring on remote, often unattended network installations—such as a database or transaction log requiring backup, unexpected client disconnections, client deadlocks or unacceptable system response time—and alerts a central system administrator to take corrective action.

Performance Accelerator

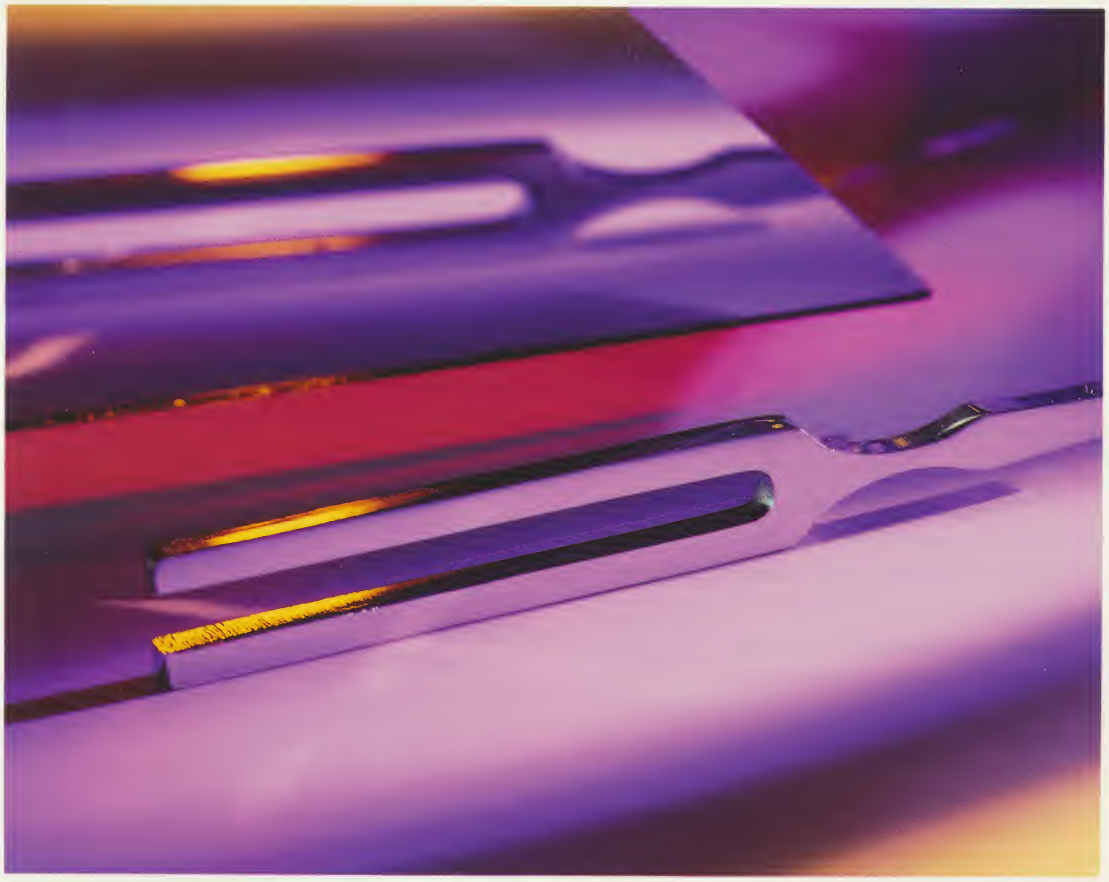
The Performance Accelerator combines two advanced technologies to solve the critical performance problems of ORACLE SQL*Forms applications—increased CPU usage owing to poor memory management and costly, needless database interaction owing to the use of the ORACLE DUAL table. The Performance Accelerator caches cursors to improve response time and reduce CPU usage. It further boosts performance by eliminating all calls to the ORACLE DUAL table, a device required by ORACLE SQL*Forms when it performs application logic such as comparing field values for validation.

The Performance Accelerator also profiles an entire application, producing detailed timing statistics on SQL statement triggers. Via a menu-driven interface, the Performance Accelerator lets you review performance statistics, such as elapsed execution time and elapsed parse time, a task that is critical in pinpointing and correcting application bottlenecks and inefficiencies.

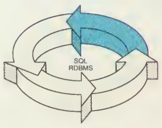
SQL◆Batch

SQL◆Batch is a unique tool that adds multitasking capabilities to your RDBMS and VAX/VMS environment. With SQL◆Batch you can submit procedures for any RDBMS directly to the VAX/VMS batch processor, leaving your terminal free for work that can only be done interactively.

SQL◆Batch allows system managers to better balance the CPU load by deferring RDBMS reports and other time-intensive tasks to off-peak hours or by running them at lower priorities. Terminal time is then maximized for other interactive RDBMS applications.



Operational Control Phase



Until recently the operational control arena was unchartered territory for RDBMSs in OS/2, Unix and VMS environments. As RDBMSs gained prominence and user confidence in the technology evolved, corporations began migrating RDBMS applications out of testing and into production environments. With this migration countless problems emerged, all of which pointed to one thing—the tremendous need for operational control facilities to manage the day-to-day operations of database administration and to effectively manage growth.

At SQL Solutions we pioneered technologies to address these problems long before RDBMSs had seen widespread corporate use.

DBA Companion Environment

The DBA Companion Environment is SQL Solutions' flagship product, a versatile suite of tools that enable database administrators to effectively manage applications, users, security, source code, database objects and storage resource capacity in rapidly evolving SQL production environments.

The DBA Companion Environment comprises three separate products: the Application Manager, the Database Analyzer and the Resource Manager.

The Application Manager is a controlled, forms-based environment for automating application configuration management and security. The Application Manager provides sophisticated scanner routines that scan the source code files of your applications, extracting the specific table access requirements for each resource—screen, report, script and program—comprising your applications. The information is then loaded into an application repository for further analysis. The power of these scanner routines makes it possible to see the interrelationships between all source code modules and files. A complete cross-reference facility is available for each RDBMS object, allowing you to perform impact-of-change, where-used and application bill-of-material functions.

At the heart of the Application Manager is the automation of database security. With the Application Manager the DBA no longer has to manually grant specific access privileges to each user for each table—a tedious and error-prone process at best. The Application Manager fully automates the process by using the scanner routines and by introducing the concept of "user classes." When new database users are created, the DBA simply assigns them to the appropriate user class, and the literally hundreds of GRANT statements required by the RDBMS are automatically issued, audited, managed and reported on. In addition, the Application Manager comes with a dynamic, privilege-dependent runtime menu system.

The Database Analyzer is the perfect complement to the Application Manager. It provides in-depth analysis, exception reporting and automatic cleanup of virtually every database object in the RDBMS environment. The Database Analyzer examines over 120 database objects and attributes to produce intuitive exception reports and interactive screens that quickly identify portions of the database environment that require immediate attention. Should problems be detected, such as a

number of widowed synonyms or grants still residing in the database, the Database Analyzer offers the DBA the option to automatically remove them from the database.

The Resource Manager is the first storage management and capacity planning tool designed for RDBMSs. With the Resource Manager the DBA can now efficiently utilize storage resources, identify and correct fragmentation and chaining problems, ensure optimal database performance and plan for future database expansion by monitoring growth rates.

The Resource Manager contains four modules: the **Recorder**, which logs information about resource objects (tables, tablespaces, indexes, clusters, etc.), the **Reporter**, which generates a variety of on-line reports, including statistics, totals, histograms and trends analysis, based on the Recorder data; the **Expert**, used to easily locate anomalies in the storage architecture, such as which tables are candidates for striping, which indexes are redundant, which clusters are highly fragmented, and so forth; the **Assistant**, which automatically resizes database objects, moves objects between tablespaces, drops and renames objects and eliminates both table and database fragmentation.

SA Companion

SA Companion is the only operational control environment to meet the productivity demands of SQL system administrators. Fully integrated, SA Companion aids system administrators in managing complex server networks—often configured with multiple servers, devices, databases and users—that dynamically change as the information enterprise evolves.

SA Companion's intuitive window-driven interface permits system administrators, even those new to the role, to quickly learn to master the art of SQL systems administration. With SA Companion you can configure and control multiple servers without learning or recalling syntax for dozens of SQL commands or system procedure calls. SA Companion even creates data definition language (DDL) scripts that can be used to re-create the entire server environment.

SA Companion organizes the functions of SQL systems administration into the following categories, each accessible from the main SA Companion menu: Server, Device, User and Database Management.

The SQL Productivity Environment: The Complete Solution

No other software development firm has the depth or breadth of tools to compare to the SQL Productivity Environment. Given SQL Solutions' years of experience in relational database management systems, our productivity tools can assure your success in meeting the escalating productivity demands at each phase of the SQL Application Lifecycle.

Premium Support for Premier Solutions

Addressing your productivity demands is critical, but safeguarding your software investment is equally important. SQL Solutions protects your investment in the SQL Productivity Environment by offering the most comprehensive corporate support program in the industry today.

Staffed by quality technical support specialists, SQL Solutions' Support Services Program is designed to assist you every step of the way, from product installation through test and ongoing use of the software. Our support staff is not only conversant in the SQL Solutions product offerings but also has the necessary RDBMS, operating systems, communications and networking expertise to quickly resolve configuration-related issues that may arise.

SQL Solutions' entry-level support package consists of full product documentation and telephone hotline support; software update rights are included. SQL Solutions also offers premium support packages, which include 24-hour telephone hotline support and a range of consulting and training services.

SQL Solutions

Corporate Headquarters

SQL Solutions, Inc.
8 New England Executive Park
Burlington, MA 01803
(617) 270-4150
Fax: (617) 270-4158
1-800-933-0044

Federal Division

SQL Solutions, Inc.
15200 Shady Grove Road
Suite 350
Rockville, MD 20850
(301) 840-3925
Fax: (301) 670-0084

International Offices

SQL Solutions, Limited
3 Robert Speck Parkway
Suite 550
Mississauga, Ontario L4Z2G5
(416) 896-7579

SQL Solutions, (U.K.) Limited
Kennett House, Waterside Park
Sweetwell Road
Bracknell RG12 1HH
011-44-344-714053

SQL Solutions Europe B.V.
Entra Dapark Kosterijland 14e
3981 AJBUNNIK
The Netherlands
011-31-3-405-70804